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ocket No. : **HM-388PCT**
S. Application No. :
International Application No. : **PCT/EP99/05116**
International Filing Date. : **JULY 17, 1999**
Priority Date Claimed : **JULY 22, 1998**
Title of Invention : **Günter Knepe, Jochen Münker, Horst Grafe and Jürgen Seidel**
Applicant(s) for (DO/EO/US) : **METHOD AND DEVICE FOR GUIDING AND SUPPORTING A THIN SHEET
OR METAL STRIP**

09/744181

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

- ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
☒ This express request to begin national examination procedures 35 U.S.C. 371 (f) at any time rather than delay examination until the expiration of the applicable time limit set forth in 35 U.S.C 371(b) and PCT Articles 22 and 39(1).
☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date
☒ A copy of the International Application as filed [35 U.S.C. 371(c)(2)].
 a) ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 b) ☐ has been transmitted by the international Bureau.
 c) ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
☒ A translation of the International Application into English [35 U.S.C.371(c)(2)].
☐ Amendments to the claims of the International Application under PCT Article 19 [35 U.S.C.371(c)(3)].
 a) ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 b) ☐ have been transmitted by the International Bureau.
 c) ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 d) ☐ have not been made and will not be made.
☐ A translation of the amendments to the claims under PCT Article 19 [35 U.S.C.371(c)(3)].
☒ An oath or declaration of the inventor(s) [35 U.S.C.371(c)(4)]. **UNSIGNED**
☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 [35 U.S.C.371(c)(5)]

Items 11. to 16. below concern other document(s) or information included:

- ☐ An Information Disclosure Statement under 37 C.F.R. 1.97 and 198.
☐ An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
☒ A FIRST preliminary amendment.
☐ A SECOND or SUBSEQUENT preliminary amendment.
☐ A substitute specification.
☐ A change of power of attorney and/or address letter.
☒ (other items or information) Four sheets of drawings

EXPRESS MAIL No.: EL 670 216 362 US Deposited: January 19, 2001

I hereby certify that this correspondence is being deposited with the United States Postal Service Express mail under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, DC 20231.


Friedrich Kueffner

January 19, 2001
Date

JC07 Rec'd PCT/PTO

19 JAN 200

X The following fees are submitted:

BASIC NATIONAL FEE [37 CFR 1.492(a)(1)-(5)]:

- | | | |
|----------|---|------------|
| <u>X</u> | Search Report has been prepared by the EPO or JPO..... | \$ 860.00 |
| — | International preliminary examination fee paid to USPTO [37 CFR 1.482]:..... | \$ 690.00 |
| — | No International preliminary examination fee paid to USPTO [37 CFR 1.482]
but International search fee paid to USPTO [37CFR 1.445(a)(2)]:..... | \$ 710.00 |
| — | Neither International preliminary examination fee [37 CFR 1.482] nor
International search fee [37 CFR 1.445(a)(2)] paid to USPTO:..... | \$ 1000.00 |
| — | International preliminary examination fee paid to USPTO [37 CFR 1.482]
and all claims satisfied provisions of PCT Article 33 (2) to (4): | \$ 100.00 |

ENTER APPROPRIATE BASIC FEE AMOUNT: \$ 860.00

Charge of \$ 130.00 for furnishing the oath or declaration later than ____20____30 months
on the earliest claimed priority date [37 CFR 1.492(e)]

Claims	filed	Extra	Rate	
Total Claims	16	-20=	x \$ 18.=	\$
Indep. Claims	1	- 3=	x \$ 80.=	\$
Multiple Dependent Claims (if applicable) + \$ 270.=				

TOTAL OF ABOVE CALCULATIONS: \$ 860.00

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must be filed also. [Note 37 CFR 1.9, 1.27, 1.28]

(divided by 2)

SUBTOTAL: \$ 860.00

Processing fee of \$ 130.00 for furnishing the English translation later than 20 30 months
from the earliest claimed priority date [37 CFR 1.492(f)]

TOTAL NATIONAL FEE:	\$ 860.00
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be for recording the enclosed assignment [3/ CFR 1.21(h)] The assignment must be accompanied by an appropriate cover sheet [37 CFR 3.28, 3.31]. **\$ 40.00 per property**

TOTAL FEES ENCLOSED: \$ 860.00

AMOUNT TO BE REFUNDED: Refunded \$

AMOUNT TO BE CHARGED: Charged \$

- a) ☒ The amount of \$ 860.00 to cover the above fees is enclosed.
- b) ☐ Please charge my Deposit Account No. 11-1835 in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c) ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-1835. A duplicate copy of this sheet is enclosed.

OTE: Where an appropriate time limit under 36 CFR 1.494 or 1.495 has not been met, a petition to revive [37 CFR 1.137(a) or (b)] must be filed and granted to restore the application to pending status.

END ALL CORRESPONDENCE TO:

Friedrich Kueffner
342 Madison Avenue
Suite 1921
New York, NY 10173

Friedrich Kueffner
Name

Friedrich Kueffer
signature

29,482
Reg. No.

January 19, 2001
Date

JUL 1999 PCT/PTO 19 JAN 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

HM-388PCT

Applicant(s) : Günter Knepe, et al
Serial No. : NOT YET KNOWN (PCT/EP99/02830PCT/EP99/05116)
Int. Filed : April 27, 1999JULY 17, 1999
For : METHOD AND DEVICE FOR GUIDING AND SUPPORTING A
THIN SHEET OR METAL STRIP

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

S I R:

In advance of the first office action, please amend the claims
as follows:

IN THE CLAIMS

Claim 1, line 5, change "characterized in that" to --wherein--.

Claim 2, line 2, change "characterized in that" to --wherein--.

Claim 3, line 1, change "claim 1 or 2, characterized in that"
to --claim 1, wherein--.

Claim 4, line 1, change "one or several of the claims 1 to 3,"
to --claim 1,--;
line 2, change "characterized in that" to --wherein--.

Claim 5, line 1, change "one or several of the claims 1 to 3,"
to --claim 1,--;
line 2, change "characterized in that" to --wherein--.

Claim 6, line 1, change "one or several of the claims 1 to 4,"
to --claim 1,--;
line 2, change "characterized in that" to --wherein--.

Claim 7, line 1, change "one of the claims 1 to 6, characterized"
to --claim 1, wherein--;
line 2, delete "in that".

Claim 8, line 1, change "one of the claims 1 to 7, characterized"
to --claim 1, wherein--;
line 2, delete "in that".

Claim 9, line 4, change "characterized in that" to --wherein--.

Claim 10, line 1, change "characterized in that" to --wherein--.

Claim 11, line 1, change "claim 9 or 10, characterized in that"
to --claim 9, wherein--.

Claim 12, line 1, change "claim 9, 10 or 11, characterized in
that" to --claim 9, wherein--.

Claim 13, line 1, change "least one of the claims 9 to 12,"
to --claim 1,--;
line 2, change "characterized in that" to --wherein--.

Claim 14, line 1, change "one or several of the claims 9 to 13,"
to --claim 9,--;
line 2, change "characterized in that" to --wherein--.

Claim 15, line 1, change "one or several of the claims 9 to 14,"
to --claim 9,--;
line 2, change "characterized in that" to --wherein--.

Claim 16, line 1, change "one or several of the claims 9 to 15,"
to --claim 9,--;
line 2, change "characterized in that" to --wherein--.

REMARKS

Claims 1 - 16 are in the application.

As a result of the foregoing amendment, the claims have been amended to remove improper multiple dependencies.

Any additional fees or charges required at this time in connection with the application may be charged to our Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

FK:ml
January 19, 2001
342 Madison Avenue
New York, NY 10173
(212) 986-3114

Friedrich Kueffner
Friedrich Kueffner
Reg. No. 29,482

EXPRESS MAIL No.: **EL 670 216 362 US** Deposited: **January 19, 2001**

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Friedrich Kueffner
Friedrich Kueffner

12 MAR 2001

Translation of Amended Pages of WO 00/05020 (PCT/EP99/05116)

Method and Device for Guiding and Supporting a Thin Sheet or
Metal Strip

The invention relates to a method as well as a device for guiding and supporting a comparatively thin sheet metal or metal strip during transport across a conveying device, such as a rolling table, and/or during, before or after a cutting process when passing through shears, wherein the sheet metal or strip at least at its underside is loaded with an energy-rich bundle of jets of a liquid or gaseous medium and is thereby supported and guided by means of impulse energy and the medium is guided under pressure through supply channels in the interior of the transport and/or blade carrier drums to jet nozzles at their periphery and exits as a closed jet from them before and/or behind the support areas of the drum, or as closely as possible adjacent to the blades of the blade drum, against the sheet metal or strip at a slant or a substantially perpendicular angle relative to the sheet metal or strip.

In the rolling technology, it has been proven particularly difficult in practice to safely guide thin sheet metal or strips across a conveying device, such as a rolling table, or to shears because thin strips have the tendency to drop or lift after leaving a guiding element and, as a result of this, to impact a subsequently arranged device or a guide element or to fly up and to thereby become deformed. In particular, this problem is observed

in connection with shears, without cutting action but also during cutting, when the leading edge of the strip passes through.

In accordance with the developmental tendency toward sheet metal or metal strips that are thinner and thinner, in particular, of non-ferrous metals such as copper or aluminum, but also in connection with very thin steel sheet, this phenomenon results in increasingly greater difficulties. Up to now, no practice-oriented and safe solution has been found for overcoming them.

DE 14 27 231 discloses a device for dividing rolling stock, in particular, sheet metal strips to commercial lengths by means of shears with carriages with a clamping member, wherein the carriages are arranged at the inlet side upstream of the shears and movable along the transport path. The clamping carriage arranged at the inlet side continuously measures the advancement of the sheet metal by means of a pulse generator within the pulse graduation. When a preselected partial length of the sheet metal portion has passed through the cutting plane of the shears, the sheet metal advancement is stopped by means of a digital control member. The one or more clamping carriages grip the transported goods from above and comprise, for temporary coupling the transported goods, solenoids or tongues that are hydraulically operated or operated by known means.

The closest prior art is disclosed in the document DE-C 944 919. This document discloses a method for guiding and supporting a material strip during transport across a conveying device such as a roll table and/or during, before or after a cutting process when passing through shears, wherein the material strip is supported at

least at its underside with energy-rich bundles of jets of a gaseous medium and is thereby supported and guided by impulse energy. The gaseous medium is guided out of the interior of the drums by means of jet nozzles on the drum periphery.

Based on the aforementioned prior art, it is an object of the invention to safely guide thin sheet metal or strips during transport across a conveying device, such as a roll table, and/or during, before or after a cutting process when passing through shears and to have the medium act only in that area which is beneficial for stabilizing the strip, and, on the other hand, to prevent an ineffective media use and, at the same time, to avoid flooding of the surroundings of the strip or the shears and the transport device with excess medium.

As a solution to this object it is proposed with the invention in connection with a method according to the preamble of claim 1 that the medium, by means of a rotary valve arranged at an end face of the rotatable transport or blade drum, exits in a limited angular position of a drum from jet nozzles directed against the sheet metal or metal strip.

Further advantageous embodiments of the method according to the invention are provided according to the features of the dependent claims.

Because the stabilization of the strip and particularly of the leading edge of the strip or of the strip head is not provided by mechanical means, but by means of impulse energy of a jet bundle of a liquid or gaseous medium, a collision or impact of the strip or

the leading edge of the strip or the strip head on a construction component of any possible type of the roll table or the shears is safely prevented. The jet nozzles can be arranged according to the invention about the entire strip width or across the entire drum length.

With the inventively important embodiment of the method, according to which the medium flows out of jet nozzles oriented against the sheet metal or the strip in a limitable angular position of one drum by employing a rotary valve, preferably arranged in an end face of a rotatable transport drum or blade carrier drum, it is achieved in an advantageous way that the medium is effective only in the area which is beneficial for stabilizing the strip and that, on the other hand, no inefficient media use takes place. At the same time, overflowing of the direct vicinity of the strip or the shears of the conveying device with excess medium is prevented.

One embodiment of the method provides that for chisel-type shears comprising a lower or upper drum, provided with a cutting chisel, and a counter drum configured as an anvil, the sheet metal or strip to be cut is loaded with at least one medium jet, respectively, out of each of the drums preferably before and/or behind the cutting plane from above and/or from below. This provides a particularly efficient stabilization of the strip or sheet metal passing through, and this in connection with an economically acceptable expenditure of stabilizing medium.

According to another embodiment of the method it is provided that in connection with shearing-off shears, comprising a blade drum each with a blade having oppositely oriented cutting edges,

respectively, the sheet metal or strip to be cut is loaded before and/or behind the separating plane with a supporting medium jet or a plurality of such medium jets from above and/or from below.

This achieves the goal that the strip or sheet metal is lifted off the blade drum in order to better guide it to the devices downstream. For example, the jet nozzles in the smooth anvil drum are to prevent riveting and thus adhesion of the cut leading edge of the strip, and, moreover, an adhesion on the chisel or blade.

Finally, the method according to the invention provides further that during advancing of the sheet metal or strip, in particular, during introduction of its head into the shears, the entry of the head into the area of a guide wedge, arranged stationarily upstream of the shears, as well as its advancing speed are determined by a signaling device and the head is loaded from below by at least one row of medium jets exiting from the guide wedge approximately perpendicularly against the sheet metal or strip and is guided thereby.

A device for guiding and supporting a thin sheet metal or metal strip, in particular, for performing the method according to the invention, in accordance with the features according to the preamble of claim 7, is characterized in that between the supply channels of a drum and a source for the medium to be supplied under pressure at least one pump and at least one rotary valve are arranged and in that the rotary valve is preferably arranged at an end face of a drum.

Further advantageous embodiments of the device are provided according to the characterizing features of the dependent claims of the device.

In this connection, the measure can be used advantageously that in the case of a drum provided with a blade or a cutting chisel the jet nozzles of a row are arranged as closely as possible adjacent to the blade and/or the chisel.

In a further development of the invention it is provided that the guide wedges comprise jet nozzles on supply channels provided for media and that the latter are connected to media supply lines with a pressure pump and a media source arranged therein and that above the sheet metal or strip a signal device monitoring the entry of the strip is arranged which communicates by means of a control signal line with the motor of the pump.

Further details, features, and advantages of the invention result from the following explanation of several embodiments illustrated schematically in the drawings. It is shown in:

Fig. 1 in a representation similar to a flow sheet a transport drum with supply channels and jet nozzles arranged therein, with a rotary valve at the end face, pressure pump, and media source;

Fig. 2 in a side view and partially in section, shearing-off shears with an arrangement of the jet nozzles according to the invention;

Fig. 3 in a side view a similar arrangement with chisel-type shears furnished according to the invention with jet nozzles;

Fig. 4 in a side view shears with stationary guide wedges arranged upstream and downstream and with jet nozzles arranged therein.

The purely schematic illustration of Fig. 1 shows supply channels 4 arranged in a transport drum 7 for supplying the jet nozzles 5 and 5' formed therein. Opposite the end face of the transport drum 7 a rotary valve 9 is arranged which is connected with a central bore 20 to a conveying line 23, extending from a pressure pump 22, for a liquid medium. The rotary valve 9 is arranged so as to be non-rotatable while the transport drum 7 rotates relative thereto when functioning as a transport drum 7 or blade drum 8, as is known in the art. Connecting channels 21, 21' beginning at the central bore 20 and having exit openings at the side facing the end face of the transport drum 7 are provided in the rotary valve 9. Medium that is under pressure is released always when the openings of the supply channels 4 coincide with the oppositely oriented openings of the connecting channels 21 in the rotational direction to thus allow flow in a limited angular range. In other angular positions of the transport drum 7, the supply channels 4 of the transport drum 7 cannot be flushed with pressure medium. It is also possible to adjust different ejection widths with the jet nozzles.

Moreover, the pressure pump 22 with its motor 22' can be controlled via a signal and switching device, similar to the device illustrated in Fig. 4, for example, according to the requirements

of an incoming metal strip 1. The pressure pump 22 takes in a liquid medium from the medium source 25 through the intake line 24.

Fig. 2 shows as an example a blade carrier drum 8, 8' with a device for guiding and supporting a comparatively thin sheet metal or metal strip 1. The blade carrier drums are provided with blades 6 in a manner known in the art which interact with one another and cut the metal strip 1 in the cutting plane y-y when contacting one another. The latter is transported on the rolling table 10 and during the cutting process is guided and stabilized from below or from below and from above by bundles of jets 2, 2' exiting from the jet nozzles 5. The jet nozzles 5, 5' are arranged such that they secure at both sides of the cutting plane y-y the strip 1 in the given position and, in particular, prevent a slanting out of the transport direction. Moreover, in regard to the shearing-off shears 13, same elements are identified with same reference numerals.

In Fig. 3 a similar arrangement is shown with the difference that the shears are chisel-type shears 3 with a cutting chisel 11 wherein a counter drum 8' is correlated with the blade drum 8 provided with the chisel. In this connection, it must be prevented that the strip 1 during cutting by the cutting chisel 11 is riveted to the smooth surface or adheres thereto because then the cut leading edge of the strip would be deformed. Accordingly, the blade drum 8 and, in particular, the anvil drum 8' are provided with supply channels 4 in the aforementioned axis-parallel arrangement which have jet nozzles from which jet bundles 2, 2' of a liquid medium exit and reliably prevent the leading edge of the

strip that has been cut from being riveted to or adhering on the counter drum 8'.

Fig. 4 shows a further similar arrangement with chisel-type shears 3 in which between the shears and the rolling table 10 guide wedges 15 are arranged. They have jet nozzles 5 for medium-loaded supply channels 4 which are connected to medium supply lines 29 having a pressure pump 27 arranged therein. Above the sheet metal or metal strip 1 a signaling device 19 monitoring the introduction of the strip at the strip head 16 is provided, wherein the signaling device is in communication via a signal line 26 with the motor 28 of the pressure pump. The pressure pump is supplied with the liquid medium in a manner known in the art from the medium source 25 by means of a suction line. The passage of the strip head 16 of the metal strip 1 is detected by the signaling device 19 which then activates via the signal line 26 the switch for the motor 28 and thus starts the pressure pump 27. The latter conveys the pressure medium through the supply line 29 via the supply channels 4 to the jet nozzles 5. The principle holds true for all jet nozzles, also those in the drums. A signaling device must detect the strip head and the cut. The jet nozzles are then loaded only briefly at the strip head and the cut. The signal can also be used by a device which is already present anyway.

Moreover, the chisel drum of the chisel-type shears 3 is in communication via the rotary valve 9 (not shown in Fig. 4) with the supply channel 4' and the jet nozzles 5' such that a bundled medium jet 2' exits with high energy from below against the metal strip 1 in the area of the strip head 16 and prevents that the comparatively thin and bendable strip 1 bends downwardly and

impacts against the guide wedge 15' to the right and is thereby deformed.

Only during the further course of the strip transport, after a certain amount of time or a measured advancing of the metal strip 1, the chisel-type shears 3 are activated and a predetermined length of strip is cut off, wherein the supply channels 4'' of the chisel drum and the counter drum previously unused cooperate with the rotary valve 9 take over the guiding of the strip 1 by means of energy-rich media jets.

Claims

1. A method for guiding and supporting a comparatively thin sheet metal or metal strip (1) during transport across a conveying device (10), such as a rolling table, and/or during, before or after a cutting process when passing through shears (3), wherein the sheet metal or strip (1) is loaded at least from its underside (1') with energy-rich jet bundles (2, 2') of a liquid or gaseous medium and is thus supported and guided by means of impulse energy, and wherein the medium is guided under pressure through supply channels (4) in the interior of the transport and/or blade carrier drums (7, 8) to jet nozzles (5) at their peripheries and exits as a closed jet (2) from them before and/or behind the support areas of the drums or as closely as possible adjacent to the blades (6) of the blade drum (8) against the sheet metal or strip (1) at a slant or at a substantially perpendicular angle relative to the sheet metal or strip (1),
characterized in that
the medium flows out of the jet nozzles (5) oriented against the sheet metal or metal strip (1) in a limitable angular position of a drum (7, 8) by employing a rotary valve (9), preferably arranged at an end face of a rotatable transport or blade carrier drum (7, 8).
2. A method according to claim 1, characterized in that the signaling device detects the strip head or the strip cut and the jet nozzles (5) at the strip head or strip cut are then loaded only briefly with medium.

3. A method according to claim 1 or 2, characterized in that in the case of transport drums of a rolling table the jet nozzles during the respective pass of the strip head are briefly successively loaded with medium.
4. A method according to one or several of the claims 1 to 3, characterized in that in the case of chisel-type shears, comprising an upper or lower drum (8) provided with a cutting chisel (11) and a counter drum (8') formed as an anvil, the sheet metal or strip (1) to be cut is loaded with at least one medium jet (2, 2') out of each of the drums (8, 8'), preferably before and/or behind the cutting plane (y-y), from above and/or from below.
5. A method according to one or several of the claims 1 to 3, characterized in that in the case of shearing-off shears (13), comprising a blade drum (8, 8') each with a blade (6, 6') having oppositely positioned edges, the sheet metal or strip (1) to be separated is loaded, respectively, before and/or behind the cutting plane (y-y) with a supporting medium jet or several such medium jets (2,2') from above and/or from below.
6. A method according to one of several of the claims 1 to 4, characterized in that upon advancing of the sheet metal or strip (1), in particular, during introduction of its head (16) into the chisel-type shears (3), the entry of the head (16) in the area of the guide wedge (15) arranged stationarily upstream of the chisel-type shears (3) as well as its advancing speed are determined by a signaling device (19) and the head (16) is loaded and guided by at least one row of

medium jets (2, 2') exiting from the guide wedge (15) from below approximately perpendicularly against the sheet metal or strip (1).

7. A device for guiding and supporting a thin sheet metal or metal strip (1), in particular, for performing the method according to the invention, comprising transport drums and/or blade carrier drums (7, 8), wherein the drums at their periphery have jet nozzles (5) arranged in axis-parallel alignment in at least one row which, upon loading with a medium, are oriented against the top surface and/or bottom surface of the sheet metal or the metal strip, wherein the jet nozzles (5) are connectable, starting at supply channels (4) extending in the interior of the drums (7, 8), with sources (25) provided external to the drums (7, 8) with connecting members (21, 21') for a medium that can be supplied under pressure, characterized in that at least one pump (22) and at least one rotary valve (9) are arranged between the supply channels (4) of a drum (7, 8) and a source (25) for a medium that can be supplied under pressure, wherein the rotary valve is arranged preferably at an end face of a drum (7, 8).
8. A device according to claim 7, wherein between the chisel-type shears (3) and the rolling table (10) guide wedges (15) are arranged, characterized in that the guide wedges (15) comprise jet nozzles (5) on supply channels (4) provided for a medium, and that they are connected to media supply lines (29) with a pressure pump (27) arranged therein and a media source (25),

and that above the sheet metal or strip (1) a signaling device (19) monitoring the entry of the strip is arranged which is in communication with the motor (28) of the pump (27) via a control signal line (26).

9. A device according to claim 8, characterized in that the jet width of the jet nozzles (5) is adjustable.
10. A device according to one or several of the claims 7 to 9, characterized in that in the case of transport drums of a rolling table the jet nozzles are distributed radially on the periphery of the drum.

List of Reference Numerals

1	metal strip
2	jet bundle
3	chisel shears
4	supply channel
5	jet nozzle
6	blade
7	transport drum
8	blade drum
8'	counter drum
9	rotary valve
10	conveying device
11	cutting chisel
13	shearing-off shears
15	guide wedge
16	head of sheet metal or strip
19	signaling device
20	central bore
21	connecting channels
22	pressure pump
22'	motor
23	conveying line
24	suction line
25	media source
26	signal line
27	pressure pump
28	motor
29	medium supply line

Fig. 1

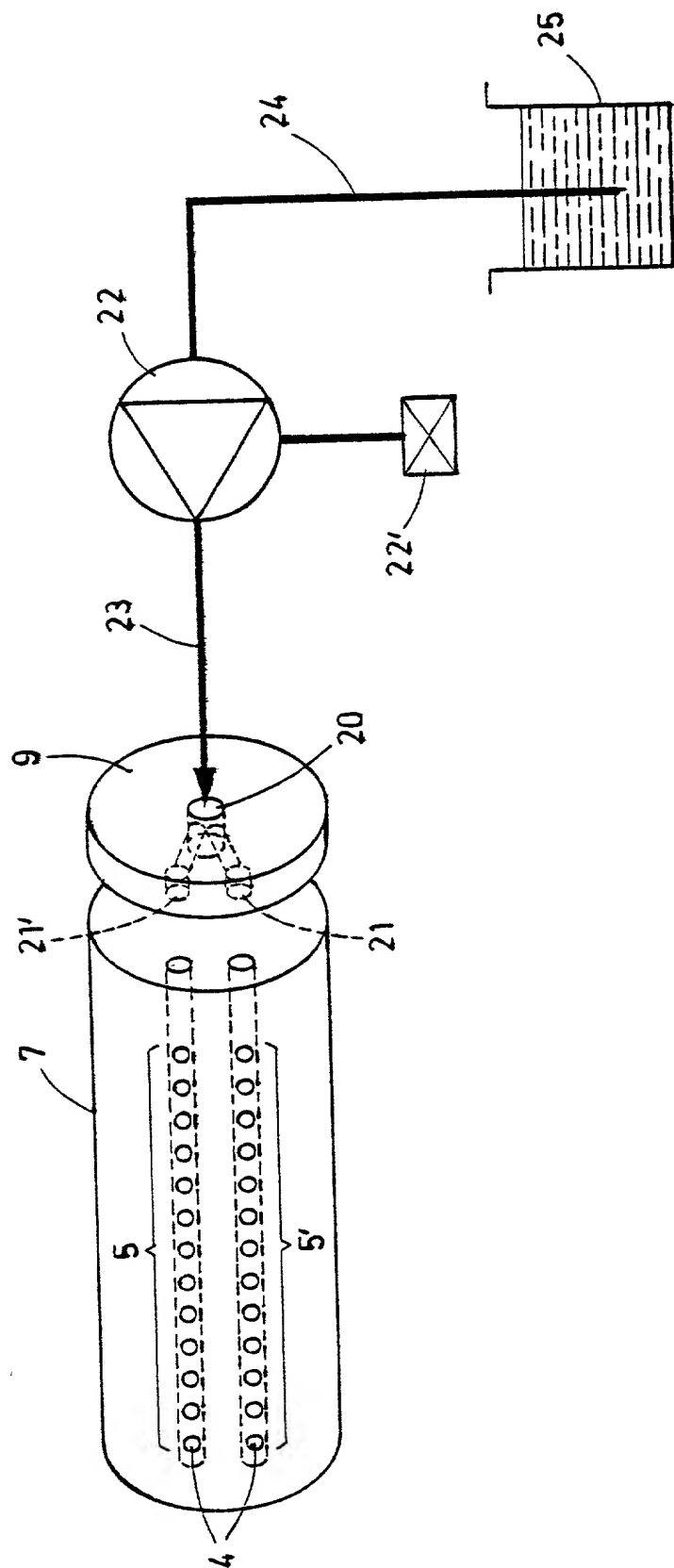


Fig. 2

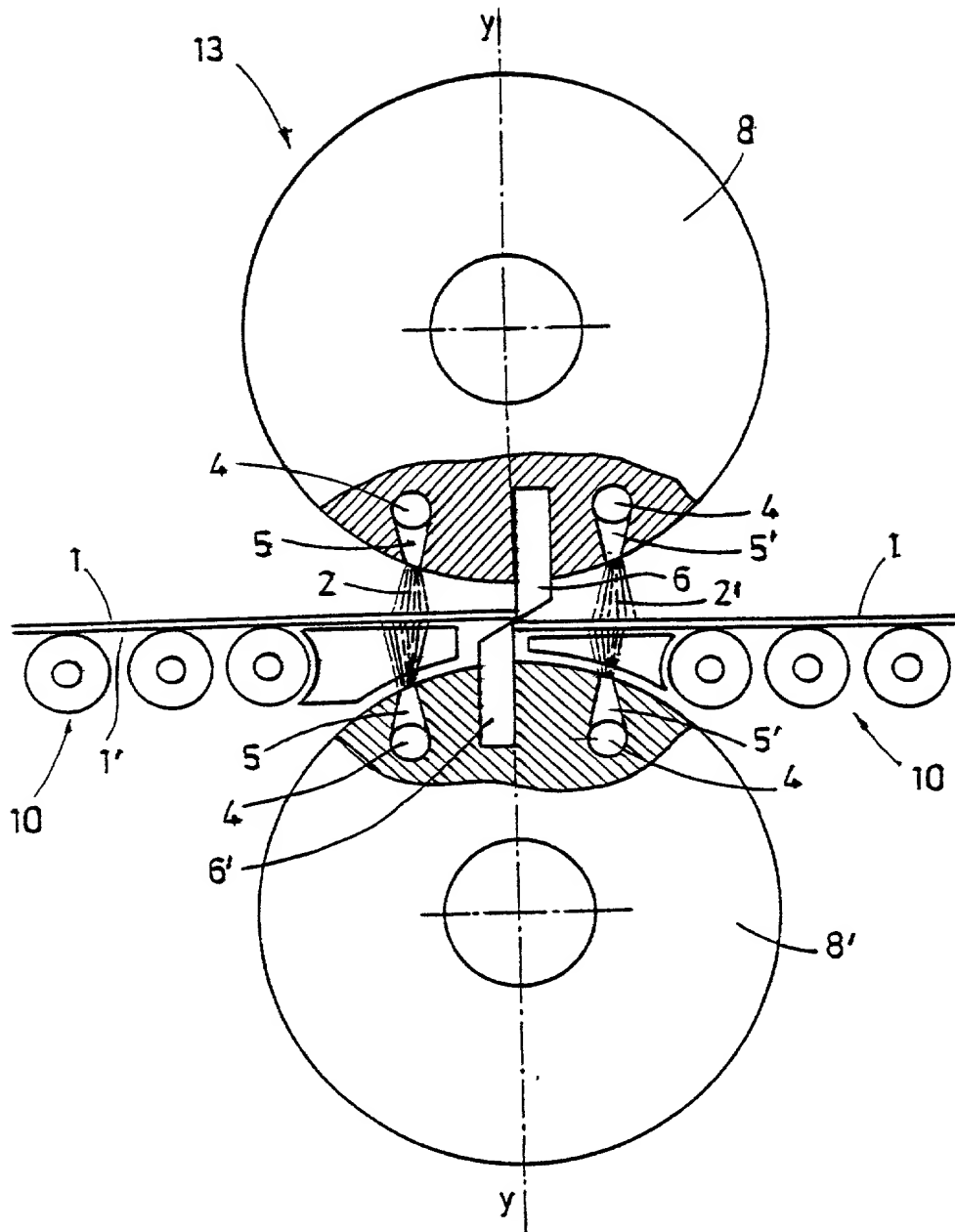


Fig. 3

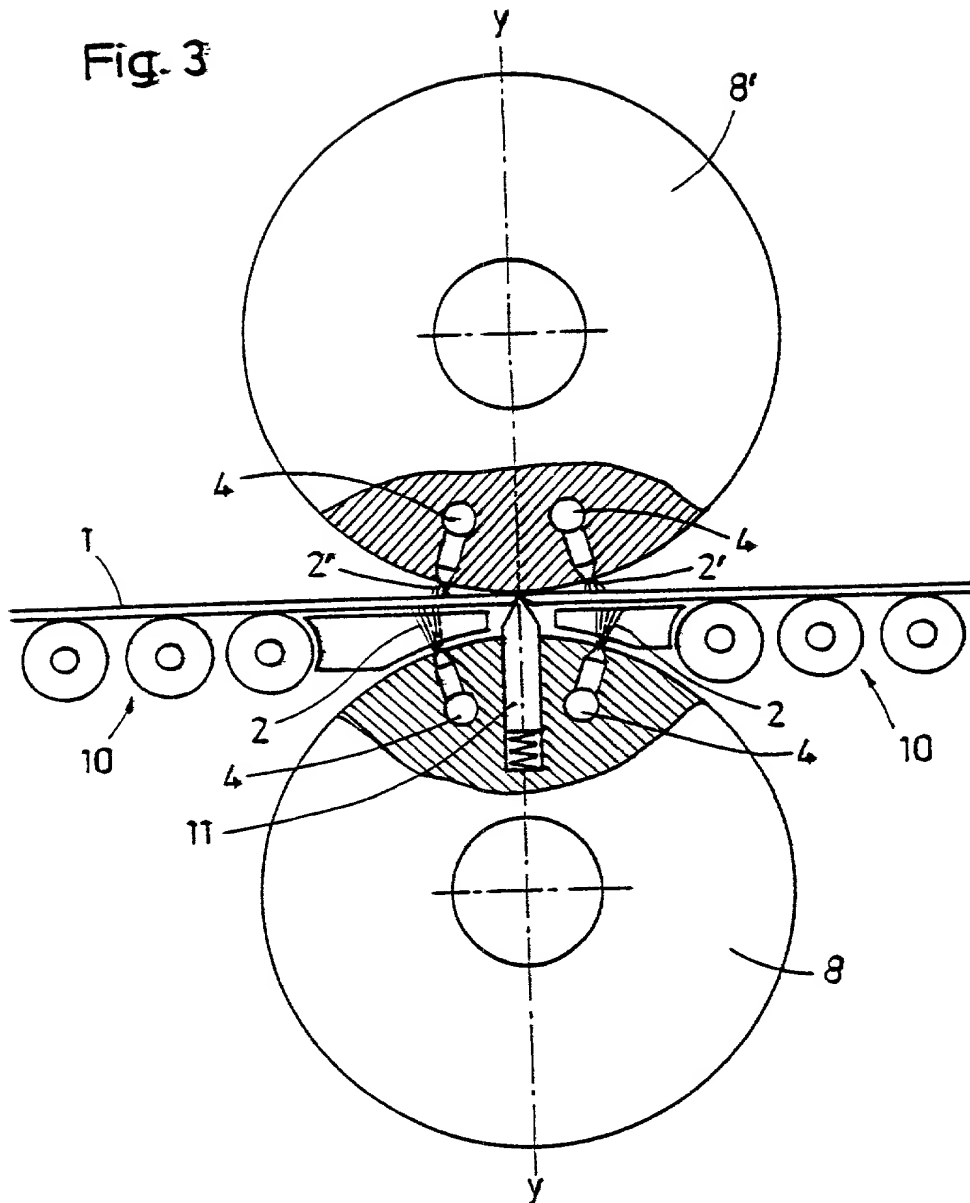
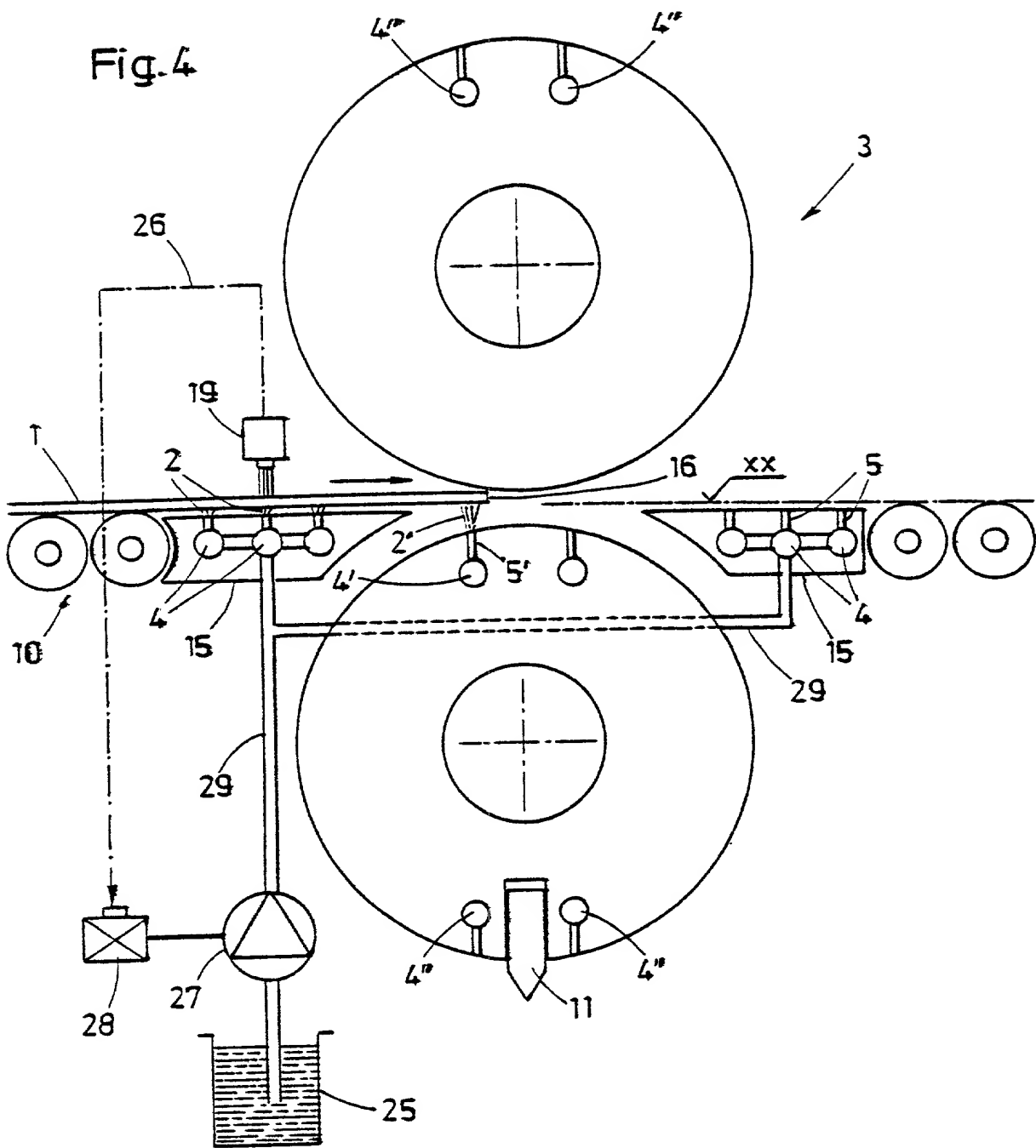


Fig. 4

Fig. 4 is a schematic diagram of a mechanical system, likely a textile or paper processing machine. The system features two large circular rollers (3) with central crosshairs. A horizontal strip (1) passes between them. On the left, a motor (19) drives a shaft (2) with gears (2') and pulleys (4, 4', 4''). A pump (27) draws liquid from a tank (25) and feeds it into a chamber (28) and a nozzle (11). The nozzle is positioned below the bottom roller. The strip passes through a series of rollers (10, 15, 16, 29) and is then wound onto a spool (5). A dashed line (xx) indicates a cross-section of the strip. Various other components are labeled with numbers 1 through 30.



COMBINED DECLARATION FOR PARENT APPLICATION AND POWER OF ATTORNEY
(includes Reference to PCT International Applications)

Attorney's Docket No.
HM-388

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD AND DEVICE FOR GUIDING AND SUPPORTING

A THIN SHEET OR METAL STRIP

the specification of which (check only one item below):

☐

is attached hereto.

☐

was filed as United States application

Serial No. _____
on _____,
and was amended
on _____ (if applicable).

☒

was filed as PCT international application

Number PCT/EP99/05116
on JULY 17, 1999,
and was amended under PCT Article 19
on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT, indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
GERMANY	198 32 925.3	22 JULY 1998	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

Combined Declaration For Parent Application and Power of Attorney (Continued)
(includes Reference to PCT International Applications)

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EM-388

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of the application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty of disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:

U.S. APPLICATIONS		STATUS(CHECK ONE)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NO.		

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

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Combined Declaration For Parent Application and Power of Attorney (Continued) (includes Reference to PCT International Applications)	Docket No. HM-388
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Combined Declaration For Parent Application and Power of Attorney (Continued)
(includes Reference to PCT International Applications)

Docket No.
HM-388

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE OF INVENTOR 201

SIGNATURE OF INVENTOR 202

SIGNATURE OF INVENTOR 203

Günther Kluppe
DATE

Jochen Dümker
DATE

Horst W. W. W.
DATE

February 14, 2001

February 16, 2001

Febr. 24. 2001

SIGNATURE OF INVENTOR 204

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SIGNATURE OF INVENTOR 206

Jürgen Schild
DATE

DATE

DATE

February 16, 2001